

REMARKS

By this amendment, claims 1-39 are pending, in which no claim is canceled, withdrawn, currently amended, or newly presented.

The Office Action mailed April 1, 2004 rejected claims 1-39 under 35 U.S.C. § 102 as anticipated by *Zheng et al.* (US 5,392,280).

Applicants respectfully traverse the outstanding rejection on the merits, because in Applicants' view the claimed invention patentably defines over the applied art, as next discussed.

Independent claims 1 and 29 recite "retrieving a search order table having a plurality of table entries corresponding to *M* queues that selectively store the packets, **the table entries storing values that correspond to relative positions of the *M* queues** and that are selected based upon a transmission constraint of the communication system." Independent claim 11 recites "a memory storing a search order table having a plurality of table entries corresponding to the *M* queues, **the table entries storing values that correspond to relative positions of the *M* queues** and that are selected based upon a transmission constraint of the communication system." Independent claim 21 recites "a memory storing a search order table having a plurality of table entries, **the table entries storing values that correspond to relative positions of the plurality of queues** and that are selected based upon a transmission constraint, wherein the number of queues is *M*." Claim 39 recites "scheduling transmission of the packets stored in a plurality of queues based upon a search order table, wherein the search order table has a plurality of table entries corresponding to the queues, **the table entries storing values that correspond to relative positions of the queues.**"

By contrast, *Zheng et al.* discloses, per the Abstract, a data transmission system and scheduling protocol utilizes both synchronous transmission and asynchronous transmission in an alternating pattern to provide each user with both a guaranteed transmission bandwidth or capacity to accommodate real-time communications, and bandwidth sharing among users to increase network utilization, while simultaneously eliminating network congestion to avoid data losses. The synchronous time slots provide for the bandwidth guarantees, while the asynchronous time slots are used to transmit data when a part of a previous synchronous time slot is not used. The asynchronous time slots also permit asynchronous data transmission using unallocated time within a given time frame.

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Additionally, *Zheng et al.* discloses (col. 5: 55 – col. 6: 10) that buffer 24 (FIG. 1) is organized in a format of one queue per connection. A connection is defined as a single path connecting two end users. As can be seen, each queue is provided with a guaranteed transmission time, GTT, associated with a given connection. GTT1 indicates by shaded area 34 that only a part of the time needed to transmit the cells of this connection is used. Thus there is an unused synchronous transmission time for Connection 1. As can be seen by the shaded area 36, Connection 2 requires additional time to transmit its data, with the time exceeding GTT2, the guaranteed transmission time for this connection. Since a prior connection has unused time, the additional data 38 associated with Connection 2 may be transmitted to switch 12 asynchronously. This is shown in format block 40 in which the data 34 from Connection 1 is transmitted first in the synchronous time slot associated with Connection 1. This is followed by the asynchronous transmission of data from Connection 2 as illustrated at 42. Thereafter the remainder of the data in Connection 2 is transmitted as illustrated at 44 in synchronous time slot GTT2. The unused time associated with GTT1 is utilized so that extra data may be transmitted in an asynchronous fashion.

Given the above description of the operation of the *Zheng et al.* system, it is clear that the buffer 24 does not and cannot store "values that correspond to the relative positions of the *M* queues" That is, the *Zheng et al.* system is not concerned with the relative positions of the queues, which has no technical significance to its operation. This is evident by the queueing structure of FIG. 8, whereby the positions of the Connections 1 through *n* are not relevant to the timed-round-robin algorithm (col. 8:29-61).

In fact, the cited FIG. 16 shows that the shared buffer memory (which follows a linked-list queueing structure) stores tags, which point to the location of the next cell in a particular queue (col. 14: 25-36) – this cannot be construed as "values that correspond to the relative positions of the *M* queues." FIG. 16 further illustrates a Connection Lookup Table that stores addresses of first and last cells of queues – again, these values are not the claimed values corresponding to the relative positions of the *M* queues.

The Office Action (page 3) offers many citations within *Zheng et al.*, presumably to indicate disclosure of the claim features: Abstract, col. 1: 8-12, col. 3: 26 – col. 4: 4; col. 4: 11-17; col. 5: 18-20, 46-66; col. 14: 25-36; FIG. 1, and FIG. 16. These many citations fail to disclose "retrieving a search order table having a plurality of table entries corresponding to *M* queues that selectively store the packets, the table entries storing values that correspond

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to relative positions of the *M* queues and that are selected based upon a transmission constraint of the communication system."

Anticipation under 35 U.S.C. § 102 requires that each and every element of the claim be disclosed in a prior art reference. Based on the foregoing, it is clear that *Zheng et al.* fails to anticipate independent claims 1, 11, 21, 29, and 39.

Because claims 2-10, 12-20, 22-28, and 30-38 depend correspondingly from independent claims 1, 11, 21, and 29, they are also in condition for allowance for at least the reasons for the allowability of these independent claims. Furthermore, the dependent claims are also separately patentable on their own merits. For example, dependent claim 2 recites "wherein the transmission constraint in the retrieving step specifies that the packets are to be transmitted to a plurality of destination nodes that are non-interfering, the communication system being a satellite communication system." The Office Action (page 3) cites to col. 5: 18-20, col. 15: 50-68, and FIG. 18:

FIG. 16 is a diagram illustrating a linked-list queueing structure to organize cell queues for connections passing through a switch. [col. 5: 18-20]

From the above discussion, one can see that with the usage of a linked-list queueing structure, the proposed traffic control scheme can be easily implemented in an exiting ATM switch architecture. However, one problem with the conventional linked-list structure is its inability to support multicast transmissions in a shared-buffer switch where one cell may appear in several queues. This problem is solved by using the enhanced linked-list data structure shown in FIG. 18 where a cell belonging to multiple queues uses multiple tags each pointing to the next cell of a queue. By associating each tag with a queue either explicitly, e.g., putting a queue ID in a tag, or implicitly, e.g., the *i*th tag is for *i*th queue, the enhanced linked-list would be able to handle multicast cells. Also, if one clears tag *i* when the cell has been transmitted in queue *i*, it is easy to determine when a multicast cell can be removed from the buffer by checking whether or not all tags have been cleared. [col. 15: 50-68]

Upon close examination of these cited passages, Applicants are left to guess at how the claim features are met, as there is simply no use of the term "satellite" in any of these passages, or anywhere else in the reference. Applicants fail to understand the relevance of these citations. The Examiner is again reminded of 35 U.S.C. § 132, which requires the Director to "notify the applicant thereof, stating the reasons for such rejection." This section is violated if the rejection "is so uninformative that it prevents the applicant from recognizing and

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seeking to counter the grounds for rejection." *Chester v. Miller*, 15 USPQ2d 1333 (Fed. Cir. 1990).

Therefore, the present application, as amended, overcomes the rejections of record and is in condition for allowance. Favorable consideration is respectfully requested. If any unresolved issues remain, it is respectfully requested that the Examiner telephone the undersigned attorney at (301) 601-7252 so that such issues may be resolved as expeditiously as possible.

Respectfully submitted,



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